CONTRIBUTIONS TO THE FLORA OF NEW SOUTH WALES: NEW SPECIES AND COMBINATIONS IN *ACACIA* AND *BLECHNUM*.

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(Plate vii.)

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Synopsis.

Two new species of *Acacia*, both members of the Bipinnatae, are described. Two Australian species of *Blechnum* are raised to specific rank and a new combination is made in the latter genus. Notes are made on two other species of *Blechnum*, also a key is provided to the five species of the *B. procerum* group found in New South Wales.

Introduction.

Due to the impending publication of the new *Flora of New South Wales* and a new handbook to the Flora of the Central Coast and Tablelands of New South Wales, it has been necessary to publish the following new species, new combinations and notes on certain taxa. *Acacia* is a genus of the family Mimosaceae, both of the new species being members of the *A. decurrens* group. On the other hand *Blechnum* is the type genus of the fern family Blechnaceae.

Acacia trachyphloia Tindale, sp. nov.

Frutex vel arbor plerumque 4·5–12 m. alta, cortice truncorum et ramorum grisea, levi, sed in arboribus vetustis asperrima, corrugata. Ramuli vix costati, pilis patentibus, longis, aureis, sericeis dense ornati. Ramuli novelli aurei. Spinae nullae. Folia: petiolus teres, 0·3–1·5 cm. longus, eglandulosus; rhachis teres, 3·5–8 cm. longa, ut ramuli vestita, inter paria pinnarum 4–8 suprema glandulis globosis, villosis praedita. Pinnae 9–22-jugae, 1–2·2 (–3·5) cm. longae, 3–4 mm. latae. Foliola 16–28-juga, anguste oblonga, 1–2·5 mm. longa, 0·3–0·5 mm. lata, subtus et saepe supra pilis aureis vel albis, laxe appressis ornata, margine pubescente, costa subcentrali, apice acuta vel obtusa. Capitula flava, globosa, in racemis vel paniculis, floribus 10–16, pedunculis pilis aureis tomentellis. Bracteolae 0·3–0·5 mm. longae, spathulatae vel peltatae, sursum curvatae, dilatatae, ciliolatae. Calyx 0·3 mm. longus, obconicus, breviter quinquelobatus, costis tubi ciliolatis; lobis obtusis, apicem versus ciliolatis. Corolla 1 mm. longa, tubulosa, quinquelobata, lobis acutis, anguste lanceolatis, costis et apicem versus parce ciliolatis. Staminum filamenta numerosa, circiter 1·5 mm. longa. Antherae biloculares. Ovarium subsessile, glabrum, 0·2 mm. longum, ovale. Stylus glaber, circiter 1·5–2 mm. longus. Legumina stipitata, subcoriacea, glauca, atrocaerulea, parce inter semina constricta, 3–6·5 cm. longa, 5–6 mm. lata. Semina nigra, nitida, oblongo-elliptica, parum compressa, in legumine longitudinaliter disposita, funiculo primum filiformi deinde in arillum pileiformem super seminis apicem incrassato, areolo prominente.

Shrub or tree, mostly 4·5–12 m. high, the bark of the trunk and branches grey, smooth but very rough and corrugated in old trees. *Branchlets* scarcely ridged, densely clothed with spreading, long, golden, silky hairs. *Young tips* golden. *Spines* none. *Leaves*: petiole terete, 0·3–1·5 cm. long, eglandulose; rhachis terete, 3·5–8 cm. long, clothed as in the branchlets, bearing globose, villose glands between the upper 4–8 pairs of pinnae. *Pinnae* 9–22 pairs, 1–2·2 (3·5) cm. long, 3–4 mm. broad. *Pinnules* 16–28 pairs, narrowly oblong, 1–2·5 mm. long, 0·3–0·5 mm. broad, clothed below and often above with golden or white, loosely appressed hairs, the margin pubescent, the costa submedian, the apex acute or obtuse. *Heads* yellow, globose, in racemes or panicles, with 10–16 flowers, the peduncles tomentellose with golden hairs. *Bracteoles* 0·3–0·5 mm. long, spathulate or peltate, towards the apex curved, dilated and ciliolate. *Calyx* 0·3 mm.

long, obconical, shortly 5-lobed, with the costae of the tube ciliolate, the lobes obtuse, ciliolate towards the apex. *Corolla* 1 mm. long, tubular, 5-lobed, the lobes acute, narrowly lanceolate, the midribs and towards the apex scarcely ciliolate. *Filaments* of the stamens numerous, about 1·5 mm. long. *Anthers* bilocular. *Ovary* subsessile, glabrous, 0·2 mm. long, oval. *Style* glabrous, about 1·5–2 mm. long. *Pods* stipitate, subcoriaceous, glaucous, dark blue, scarcely constricted between the seeds, 3–6·5 cm. long, 5–6 mm. broad. *Seeds* black, glossy, oblong-elliptical, scarcely compressed, longitudinal in the pod, the funicle at first filiform, later thickening into a pileiform aril over the apex of the seed, the areole prominent.

Holotype: Charlie's Forest, Braidwood, J. L. Boorman, 9.1915 (NSW.47363), located in the National Herbarium, Sydney, Australia. *Isotypes*: K; US; L.

Range: South Coast and tablelands of New South Wales, Australia, from Termeil southwards to Broulee Beach.

Ecological Distribution: Along creek flats in heavy alluvial soil, but also on mountainsides in dry sclerophyll forests.

Flowering Period: August to October.

The salient features of *Acacia trachyphloia* are the pendulous, golden, villous tips of the branchlets, the narrow, dark blue, glabrous pods and the rough, corrugated bark of the older trees. The pods ripen in December as shown in NSW.47364 and NSW.47359.

This species is probably most closely allied to *A. o'shanesii* F. Muell. et Maiden (syn. *A. arundelliana* F.M. Bail.), but the lower surface of the pinnules is very much paler than the upper in the latter species, also the general vestiture is fawn instead of golden. Both species are characterized by pendulous branchlets and few glands restricted to the bases of the upper pairs of pinnae, interjugary glands being absent.

Representative Specimens Examined: New South Wales: Higgins Creek, 13 miles north of Bateman's Bay, tree 9 metres high, H. Boyd, 22.8.1959 (NSW.47509; K; L; US; A); Clyde Mountain, J. L. Boorman, 12.1915 (NSW.47364); top of Clyde Mountain, 3000 ft. alt., tree 30 ft., D.B.H. 12 inches, frequent as forest understorey, principal associate species *Eucalyptus radiata*, J. S. Beard 903, 22.8.1957 (NSW.42190); Cabbage Tree Creek, 11 miles from Nellingen on the Braidwood Road, small to large trees, spreading habit, tips of the branches pendulous, bark rough and dark at the base of the tree, branches mottled and brown, frequent along the creek flats, also along Curraween Creek, E. F. Constable, 22.10.1957 (NSW.43123); Cockwhy Creek, about 18½ miles south of Milton, J. H. Maiden, 12.1892 (NSW.47359); on the left of the road from Braidwood to Nelligen, 11·6 miles from Braidwood, large tree 25 to 30 ft. high, rough bark, S. P. Sherry 17, 22.10.1957 (NSW.47400); Nellingen, near Bateman's Bay, tree 40 ft. high, D.B.H. 18 inches, J. S. Beard 901, 22.8.1957 (NSW.42195); Mosquito Bay, near Mogo, on hillside, chocolate soil, volcanic, light yellow flowers, G. Sheppard, 8.1924 (NSW.47365); Broulee Beach, 5 miles north-east of Moruya, shrub 10 ft. high, spreading habit, bark greyish, frequent, E. F. Constable, 13.10.1957 (NSW.43088).

Acacia parvipinnula Tindale, sp. nov.

Frutex vel plerumque arbor 2·5–10 m. alta, cortice truncorum et ramorum laevi, argentea vel caeruleo-grisea. Ramuli vix costati, pilis brevibus, aliquanto rigidis, aliquantum patentibus, albis vel griseis vestiti, denique fere glabri, atrobrunnei, saepe glaucissimi. Ramuli novelli albi vel flavi. Folia: petiolus 1–2 cm. longus, lateraliter planus, glandulis 3–6 depresso-oblongis vel depresso-sphericis, puberulis ornatus; rhachis 2·5–5 (–6·5) cm. longa, aliquanto in plano verticulo applanata, ut ramuli vestita, basim omnis pinnae glandula praedita, etiam glandulis 2 vel 3, interjugalibus, depresso-oblongis vel depresso-sphericis, saepe contiguis ornata. Pinnae 4–12-jugae, 1·5–5 cm. longae, 3·5–8 mm. latae, leviter glaucae. Foliola 14–30 (raro plures)-juga, cultrata vel linearia, plerumque 2–3·5 (raro –5·5) mm. longa, 0·5–1 mm. lata, margine et subtus pilis patentibus, appressis, albis parce vestita, supra prope glabra, apice obtusa, dense pubescente, basi oblique rotundata. Capitula pallido-flava, globosa, in racemis vel paniculis, floribus 14–18, pedunculis pilis brevibus, rigide patentibus, flavis vel griseis dense vestitis. Bracteolae circiter 0·4 mm. longae, spathulatae, late petiolatae, apicem versus ciliolatae. Calyx 0·3 mm. longus, obconicus, breviter quinquelobatus, angulatus, costis et marginibus ciliolatis. Corolla 1–1·2 mm. longa, quinquelobata, tubo glabro, lobis acutis, glabris, praeter margines minutissime granulosos vel ciliolatos. Staminum

filamenta numerosa, circiter 1·2 mm. longa. Antherae biloculares. Ovarium subsessile, glabrum, oblongum, apicem versus parce dilatatum, 0·5 mm. longum. Stylus glaber, 1·5–2 mm. longus. Legumina stipitata, coriacea, 5–11 cm. longa, 5–9 mm. lata, cultrata vel linearia, caeruleo-brunnea vel caeruleo-nigra, submoniliformia, glabra vel pilis brevibus, albis, appressis sparsissime vestita. Semina nigra, nitida, oblongo-elliptica, parum compressa, in legumine longitudinaliter disposita, funiculo primum filiformi deinde in arillum pileiformem super seminis apicem incrassato, areolo prominente.

Shrub or mostly a small tree 2·5–10 m. high; bark of the trunk and branches smooth, very silvery or blue-grey. *Branchlets* with unobtrusive ridges, minutely clothed with short, rather stiff, somewhat spreading, white or grey hairs on and between the ridges, later almost glabrous, dark brown, often very glaucous. *Young tips* white or yellow. *Leaves*: petiole 1–2 cm. long, flattened laterally, bearing 3–6 depressed-oblong or depressed-spherical, puberulous glands; rhachis 2·5–5 (–6·5) cm. long, somewhat flattened in the vertical plane, clothed as on the branchlets, with a gland at the base of each pair of pinnae as well as 2–3 interjugary, depressed-oblong or depressed-spherical, often contiguous glands. *Pinnae* 4–12 pairs, 1·5–5 cm. long, 3·5–8 mm. broad, slightly glaucous. *Pinnules* 14–30 (rarely more) pairs, cultrate or linear, usually 2–3·5 (rarely up to 5·5) mm. long, 0·5–1 mm. broad, sparsely clothed with spreading, appressed, white hairs on the margin and lower surface, the upper surface sometimes glabrous, the apex obtuse with an apical tuft of hairs, the base obliquely rounded. *Heads* pale yellow, globose, in racemes or panicles, 14–18 flowers in a head, the peduncles densely clothed with short, stiffly spreading, yellow or grey hairs. *Bracteoles* about 0·4 mm. long, spathulate, broadly stalked, ciliolate towards the apex. *Corolla* 1–1·2 mm. long, the tube glabrous, 5-lobed, the lobes acute, glabrous except granulose or ciliolate along the margins. *Calyx* 0·3 mm. long, shortly 5-lobed, angular, ciliolate on the midribs and margins. *Filaments* of the stamens numerous, about 1·2 mm. long. *Anthers* bilocular. *Ovary* subsessile, glabrous, oblong, slightly dilated towards the apex, 0·5 mm. long. *Style* glabrous, 1·5–2 mm. long. *Pods* stalked, coriaceous, 5–11 cm. long, 5–9 mm. broad, cultrate to linear, blue-brown or blue-black, submoniliform, glabrous or very sparsely clothed with short, white, appressed hairs. *Seeds* black, glossy, oblong-elliptical, slightly compressed, longitudinal in the pod, the funicle filiform at first, then thickened into a fleshy pileiform aril over the top of the seed, the areole prominent.

Holotype: Colo Heights, *ca.* 360 m. alt., tree 30 ft. high, smooth grey bark, in a stand on the plateau, growing in dry sclerophyll forest, M. Tindale, 15.11.1958 (NSW.46171), located at the National Herbarium, Royal Botanic Gardens, Sydney. *Isotypes*: K; BM; US; L; MEL.

Range: Coast and tablelands of New South Wales, Australia, from Singleton southwards to Hill Top. This species is common in the Hunter River Valley between Singleton and Cessnock, in the Howe's Valley–Colo Heights district and on the lower slopes of the Blue Mountains.

Ecological Distribution: In dry sclerophyll forest, on shale or sandstone, usually on plateaux but sometimes on the alluvial flats.

Flowering Period: September to early December, sometimes a second flowering between April and July.

Representative Specimens Examined: 5 miles south-east of Cessnock, in fairly moist eucalypt forest, R. Story 6652, 3.9.1959 (NSW.48973); Reedy Creek, south of Howe's Valley, 650 ft. alt., shrub 10-12 ft. high, several-stemmed, flowers pale yellow, occasional on creek bank, L. A. S. Johnson and E. F. Constable, 30.10.1954 (NSW.30173); Colo Heights, approx. 360 m. alt., shale, J. S. Beard 924 and M. Tindale, 27.9.1957 (NSW.42256); ditto, *ca.* 300 m. alt., tree 4·8 m. high, in dry sclerophyll forest, M. Tindale, 28.11.1959 (NSW.48873); Blaxland, Blue Mountains, 768 ft. alt., tree 14 ft. high, dry sclerophyll forest, M. Tindale, 2.1.1960 (NSW.48983); ditto, E. F. Constable, 13.11.1957 (NSW.42380); Bargo Bridge, E. Cheel, 6.8.1928 (NSW.47479).

A. parvipinnula is probably most closely allied to *A. filicifolia* Cheel et Welch, although the latter is characterized by much broader, blue, unconstricted pods and there are usually between 30 and 53 pairs of pinnules, also the flowering time is earlier, i.e., August to September, rarely extending into October. On the Colo River flats where both

species are common, *A. filicifolia* has completed flowering before the trees of *A. parvipinnula* are in flower, this being an important factor in preventing hybridization. In the northern part of its range, i.e., near Cessnock, the latter species flowers earlier than at Colo Heights and Blaxland, where the principal flowering time is November.

I have observed no hybrids between *A. parvipinnula* and other species of the *A. mearnsii* group, although I have spent a considerable amount of time looking for them both in the Colo River district and in the Blue Mountains between Blaxland and Yarramundi, where these species are common. At Blaxland both *Acacia decurrens* and *A. baileyana* (which hybridize quite freely) flower in the spring several months before *A. parvipinnula*.

BLECHNUM CAMFIELDII Tindale, sp. nov.

Filix robusta, erecta, usque ad 1·5 m. alta. Caudex ascendens, erectus, usque ad 5 cm. altus, cum rhizomate horizontale continuus, paleis longe acuminatis, tenuibus vel coriaceis, integris vel sparse denticulatis, nitidis, linearibus vel angusto-lanceolatis, castaneis vel rufo-atrobrunneis, brunneis vel atrobrunneis, marginem versus pallidis, usque ad 2·5 cm. longis et usque ad 3 mm. latis, apicem versus fibrillosis et contortis dense vestitus. Stipes erectus, plerumque rufo-brunneus vel niger, plerumque dense tuberculatus. Rhachis rufo-brunnea vel nigra, in filicibus juvenilibus aliquanto straminea vel ochroleuca, in plantis maturis dense tuberculata, paleis fibrillosis, rufo-brunneis, nitidis, integris vel denticulatis, marginem versus pallidis et squamellis appressis castaneis vestita. Frondes usque ad 1·5 m. longae, dimorphae, 8–33-jugae, 1-pinnatae, atrovirides, pinnis inferioribus sensim reductis. Pinnae steriles rigide coriaceae, in filicibus juvenilibus subcoriaceae, usque ad 25 cm. longae, 1·2–3 cm. latae, approximatae, saepe imbricatae, apice acuminatae, acutae vel obtusae, basi auriculatae in filicibus maturis, auriculis prominentibus usque ad 5 cm. longis, usque ad 1·5 cm. latis, margine regulariter et minutissime denticulato-serrulatae, dentibus pungentibus. Costa paleis castaneis, mediam partem versus atrobrunneis, denticulatis, basi fimbriatis dense vestita. Venae prominentes, simplices vel furcatae, paleis minutis, appressis, castaneis vestitae. Pinnae fertiles lineares, 5·5–12 cm. longae, 3–5 cm. latae, subtus ad costam sporangiis omnino obtectae, basi auriculatae vel pinnula brevi sorifera instructae. Indusium membranaceum, brunneum, lineare, integrum vel erosum, 0·5–1 mm. diametro. Sporae bilaterales, ellipticae vel subglobosae, perisporiis aliquantum reticulatis, 52–62μ × 41–49μ, ala angusta, erosa, dissecta, circiter 6μ lata.

Robust, erect fern up to 1·5 m. high. Caudex ascending, erect, up to 5 cm. high, continuous with a horizontal rhizome, densely clothed with scales which are long-acuminate, thin or coriaceous, entire or sparsely denticulate, glossy, linear or narrowly lanceolate, chestnut, red-brown, brown or dark brown, paler towards the margin, up to 2·5 cm. long and up to 3 mm. broad, towards the apex fibrillose and contorted. *Stipes* erect, usually red-brown or black, mostly densely tuberculate. *Rhachis* red-brown or black, in young ferns sometimes stramineous or buff, in mature plants densely tuberculate, clothed with fibrillose, red-brown, pale towards the margin, glossy, entire or denticulate scales and appressed, chestnut squamules. *Fronds* up to 1·5 m. long, dimorphic, 8–33 pairs, 1-pinnate, dark green, the lower pinnae gradually reduced. *Sterile pinnae* rigidly coriaceous, in young ferns subcoriaceous, up to 25 cm. long, closely spaced, often imbricate, the apex acuminate, acute or obtuse, the base auriculate in mature ferns, with prominent auricles up to 5 cm. long and up to 1·5 cm. broad, the margin regularly and minutely denticulate-serrulate, with pungent teeth. *Costa* densely clothed with scales which are chestnut, dark brown towards the centre, denticulate, fimbriate at the base. *Veins* prominent, simple or forked, clothed with minute, appressed, chestnut scales. *Fertile pinnae* linear, 5·5–12 cm. long, 3–5 cm. broad, the whole of the lower surface covered with sporangia, the base auriculate or with a short, soriferous pinnule. *Indusium* membranous, brown, linear, entire or erose, 0·5–1 mm. in diameter. *Spores* bilateral, elliptical or subglobose, with somewhat reticulate perispores, 52–62μ × 41–49μ, the wing narrow, erose, dissected, about 6μ wide.

Holotype: Fraser Island, Wide Bay district, in scanty forest, in swampy grey sandy soil amongst shrubs and sedges (*Gahnia* sp.) and other ferns (*Gleichenia* sp.); common, fertile fronds dark brown, rhachis black, sterile fronds green, C. E. Hubbard 4576, 17.10.1930 (NSW.P8046), located in the National Herbarium of New South Wales, Sydney. *Isotype*: K.

Range: South-eastern Queensland and the coastal regions of New South Wales.

Ecological Distribution: Low-lying, swampy land not far from the sea, sometimes in sheltered swamps where *Livistona australis* (R.Br.) Mart. is the dominant species.

Absolute Synonyms: *Blechnum capense* (L.) Schlecht. var. *scabrum* Domin in *Bibl. Bot.*, 85: 116. 1913. *Holotype*: Australia, Sieber Syn. Fil. exsic. No. 107. Domin did not state in which herbarium this specimen was located, but I have examined isotypes at the Natural History Museum, Paris, and the Riksmuseum, Stockholm. *Blechnum minus* (R.Br.) Ettingsh. in *Denkschr. Ak. Wien*, 23: 63. 1864, ssp. *scabrum* (Domin) Tindale in *Amer. Fern Journ.*, 50, 1: 117. 1960.

This species is named in honour of Mr. J. H. Camfield, a naturalist, who collected this species in great quantity in the Oatley-Kogarah district between 1893 and 1902. Unfortunately this fern seems to be extinct in that area, as the swamps were drained long ago for building sites. As the epithet *scabrum* is already occupied in *Blechnum* by *B. scabrum* Liebm., a new name had to be chosen for the Australian species.

After the publication of my paper in *Amer. Fern Journ.*, 50, 1: 117. 1960, I found a number of mature and juvenile plants of *Blechnum camfieldii* growing at Bay View, N.S.W., in a small swamp where the palm, *Livistona australis* (R.Br.) Mart., is the dominant species. I had been searching for living specimens of this fern for several years. Five specimens (namely NSW. P4600, P4367, P4357, P4609 and P4364) which I had previously believed to be intermediates between *B. minus* and *B. camfieldii*, I would now consider to be rather depauperate, young plants of *B. camfieldii*. The main rhachis is often stramineous or buff-coloured in young specimens of the latter species, also the bases of the pinnae are usually without auricles and the margins of the pinnae are less pungently toothed, although these young plants are more stiffly erect than in *B. minus*. The very distinctive appearance of older plants of *B. camfieldii* (when studied in the field) and the apparent absence of intermediates have led me to alter my decision and raise this subspecies to specific rank.

Blechnum ambiguum.

Blechnum ambiguum (Pr.) Kaulf. ex C.Chr. in *Dansk Bot. Arkiv*, 9, 3: 21. 1937.

Basionym: *Parablechnum ambiguum* Presl, *Epim. Bot.*: 109. 1849.

Absolute Synonyms: *Blechnum ambiguum* Kaulf., Sieb. Syn. Fil. exsic. No. 106; Presl, *Tent. Pterid.*: 103. 1836, nomen nudum. *Lomaria ambigua* Fée, *Gen. Fil.*, 5: 68. 1852.

Misapplied Names: *Blechnum laevigatum* auctt. (non Cav., *Desc.*: 263. 1802); R.Br., *Prodr. Fl. N. Holl.*: 152. 1810; Benth., *Fl. Austr.*, 7: 739. 1878; Moore & Betche, *Handb. Fl. N.S.W.*; 510: 1893; C.Chr., *Ind. Fil.*: 155. 1906. *Blechnum capense* (L.) Schlecht. ssp. *laevigatum* Domin in *Bibl. Bot.*, 85: 117. 1913. *Blechnum capense* (L.) Schlecht. var. *laevigatum* Melvaine in Proc. Linn. Soc. N.S.W., 61, 3–4: 119. 1936.

Lectotype: New Holland (Australia), Sieber Syn. Fil. No. 106, 1827 (P), examined.

Range: Coast and tablelands of New South Wales, Australia.

Ecological Distribution: Sandstone cliff-faces especially near waterfalls, in dry or wet sclerophyll forests or in rainforests.

Chromosome Number: n = 56. Published as *B. procerum*? by Manton & Sledge in *Phil. Trans. Roy. Soc. Lond.*, Ser. B, Biol. Sciences No. 654, Vol. 238: 165 (footnote). 1954. *Voucher Specimen*: Upper Falls, National Park, growing under the falls, R. Melville 3757 and M. Tindale, 13.4.1953 (K; NSW).

B. ambiguum is a common, pendulous fern on wet sandstone cliffs especially near waterfalls in the Sydney district, Blue Mountains and Southern Dividing Range of New South Wales. In *Dansk Bot. Arkiv*, 9, 3: 20–21. 1937, Carl Christensen explained

how *B. ambiguum* was confused with the South American *B. levigatum* (*laevigatum*) Cav., by which name the Australian species was known for some years. *B. ambiguum* is characterized by a creeping, very flattened rhizome (up to 6 cm. in diam.) which is densely covered with the short, broken bases of the old stipes and with scales which are papery, silky, acuminate or shortly acuminate, light fawn to dark chestnut-brown, sometimes darker towards the centre, slightly glossy or dull, narrowly lanceolate to narrowly ovate. The lamina is pale to medium green, coriaceous, 1-pinnate, semi-dimorphic, the fertile fronds being very similar to the sterile except that they are about one-half to one-third of their width. The spores are characterized by alate perispores which are distinctively marked by dark, convoluted lines. Some specimens which I have collected, e.g., NSW.P8124 and NSW.P8125 from the Hazlebrook district, Blue Mountains, show great variability in spore size which might indicate apogamy. Other specimens of *B. ambiguum*, e.g., Upper Falls, National Park, R. Melville 3757 and M. Tindale, show little variation in the size of the spores.

Other representative specimens of *B. ambiguum* are as follows: Blackheath, in a damp sandstone cave, E. F. Constable, 7.10.1948 (NSW.P5327); Narrabeen, in soil pockets under a waterfall, K. Mair & M. Tindale, 14.5.1949 (NSW.P4829); Head of Linden Creek, Linden, Blue Mountains, on rocky sandstone cliffs under a waterfall, E. F. Constable, 20.1.1954 (NSW.P6718).

Blechnum gregsonii.

Blechnum gregsonii (Watts) Tindale, comb. et stat. nov.

Basionym: *Blechnum capense* (L.) Schlecht. var. *gregsonii* Watts in *Proc. Roy. Soc. N.S.W.*, 49: 125–6. 1915.

Lectotype: Gully, Green Mountain, near Mt. Wilson, Blue Mountains, New South Wales, J. Gregson, 4.1902 (NSW.P4316), located in the National Herbarium, Royal Botanic Gardens, Sydney, Australia.

Distribution: Blue Mountains and Minnamurra Falls, South Coast, N.S.W.

Ecological Distribution: In rainforest gullies or ravines, either pendulous on sandstone cliff-faces, rock-ledges or sometimes epiphytic on trees.

Representative Specimens: New South Wales: Green Mountain, gully, J. L. Boorman, 5.1915 (NSW.P4327 and P4319); Lawson, Blue Mts., W. W. Watts, 4.1903 (NSW.P4323); Hazlebrook, pendulous on a cliff-face in a rainforest gully, growing amongst *Schizaea rupestris*, M. Tindale, 5.3.1960 (NSW.P8120); ditto, fronds very yellow-green, M. Tindale, 22.4.1960 (NSW.P8088); ditto, on a rock ledge under a waterfall, M. Tindale, 22.4.1960 (NSW.P8087); Minnamurra Falls, 3 miles west of Jamberoo, *ca.* 2000 ft. alt., pendulous in the crevices about the mouth of a cave, H. K. Judd, 20.5.1960 (NSW.P8122); ditto, epiphytic and pendulous on the trunk of *Callicoma serratifolia*, Judd, 20.5.1960 (NSW.P8123).

Rhizome robust, creeping, 1·5–2 cm. diam., clothed with scales which are shortly and finely acuminate, dull, thin, papery, pale brown or brown, very broadly ovate to ovate, 5–10 mm. long, 2–4 mm. broad, the margin with a few, long, often glandular-tipped processes; young circinate buds green, fleshy, densely paleaceous. *Stipes* pendulous, pale stramineous, smooth and glossy on the lower surface, often dark brown and asperous in the deep groove on the upper surface, the base of the stipe dark brown and clothed with the same type of scales as on the lower surface. *Fronds* pendulous, 30–75 cm. long including the stipes, uniform or almost so, coriaceous, pale green or yellowish-green. *Main rhachis* pale stramineous and glabrous on the lower surface. *Sterile pinnae* shortly stalked in the lower pairs, the upper subsessile or attached by their broad bases, 4–12 pairs, opposite or subopposite, widely spaced, the terminal segment elongated (often with 1 or 2 broadly rounded, sessile lobes at its base), 6·5–15 cm. long, 1·5–2·2 cm. broad, the lower base rounded or slightly cut away, the upper base truncate or rounded or sometimes slightly auriculate, the margin irregularly but pungently toothed, the apex abruptly acuminate with the marginal teeth coarser and more widely spaced. *Costa* glabrous. *Veins* fairly prominent, glabrous, simple or forked, ending in a hydathode close to the margin. *Fertile pinnae* eublechnoid, 4·5–15 cm. long, 0·6–2·1 cm. broad, the upper and lower base often slightly auriculate. *Sori* linear or sometimes discontinuous, close to the costa. *Indusium* linear or sometimes discontinuous,

papery, firm, brown, facing inwards, 0·5–1 mm. diam., entire or erose. *Spores* bilateral, elliptical or subglobose, with a perispore, tuberculate but without dark lines, 52–90μ × 44–86μ, the wing very narrow, 3·75–6μ, developed on one side of each spore.

The spores were uniform in size in all the material of *B. gregsonii* examined. A specimen collected by the author at Hazlebrook, N.S.W., namely, NSW.P8092, is obviously an intermediate between *B. procerum* and *B. gregsonii*, both species growing close by where the two habitats meet.

Blechnum procerum.

Blechnum procerum (Forst. f.) Sw. in *Schrad. Journ.*, 2: 75. 1800. 1801.

Basionym: *Osmunda procera* Forst. f., *Prodr.*: 78. 1786.

Two photographs of part of the type collection of *B. procerum* were very kindly forwarded to Sydney by the Director of the herbarium at Göttingen, Germany. Dr. R. E. Holttum and Mr. A. C. Jermy also supplied information about Forster's material of this species at the Herbarium, Kew, and the British Museum of Natural History, respectively. These specimens all have lomarioid fertile pinnae, the scales of the rhachis dark brown with a pale border, the smaller scales of the costae laciniate or substellate and very broadly alate spores. The latter have a reticulate perispore, 52·5–64μ × 26–32μ, with the wing usually 15–18μ wide. This is the fern which has been known as *B. minor* auctt. in most publications on the flora of New Zealand. There is a photograph under this name in Dobbie and Crookes "New Zealand Ferns" (1951), page 285. The only morphological differences which I have been able to find between the Australian and New Zealand material of *B. procerum* are the broader wing of the spores and a tendency of the costal scales to be bicolorous in the specimens collected in New Zealand.

In New South Wales I have found a small percentage of intermediates between *B. procerum* and *B. ambiguum*, where the habitats of these two ferns meet. *B. procerum* is a stiffly erect, terrestrial species usually growing on hillsides or on the banks of creeks, whereas *B. ambiguum* is a pendulous fern found on cliff-faces and in caves.

Key to the New South Wales Species of the Blechnum procerum *Group.*

A. Lower pinnae gradually reduced in size.
  B. Sterile and fertile pinnae of mature plants very prominently auriculate at the base. Scales of the rhizome glossy, with a darker central band. Stipes of mature plants dark red to black, very tuberculate ..... *B. camfieldii.*
  B.* Sterile and fertile pinnae not auriculate at the base or the lower pairs very slightly auriculate. Scales of the rhizome dull, mostly concolorous, rarely with a paler border. Stipes stramineous, sometimes mottled with brown, the base dark brown, smooth or slightly tuberculate ..... *B. minus.*
A.* Lower pinnae not or almost imperceptibly reduced in size.
  C. Fertile pinnae lomarioid. Plants erect, growing in soil on hillsides or along creek banks. Scales of the rhizome glossy, dark brown, with a pale border. Spores with a reticulate perispore, mostly marked with dark lines, usually 45-75μ × 30-41μ (rarely larger), the wing 4-17μ diam., surrounding each spore ..... *B. procerum.*
  C.* Fertile pinnae eublechnoid. Plants pendulous, growing on cliff-faces or rock-ledges or rarely on trees.
    D. Fertile pinnae almost as broad as the sterile pinnae. Rhizome with very fleshy, circinate buds. Scales of the rhizome brown or fawn, dull, almost as broad as long. Spores with a perispore, corrugated, without dark lines, 56-90μ × 44-86μ, with a narrow wing 3·75-6μ diam., on one side of each spore ..... *B. gregsonii.*
    D.* Fertile pinnae about $\frac{1}{3}$ to $\frac{1}{2}$ of the width of the sterile pinnae. Rhizome with non-fleshy buds. Scales of the rhizome light fawn, brown or ferruginous, sometimes slightly darker towards the centre when old, dull or slightly glossy, silky, narrowly lanceolate to narrowly ovate. Spores with a reticulate perispore, with dark lines, 49-75μ × 44-56μ, the wing 3·75-11μ diam., surrounding the spore ..... *B. ambiguum.*

Blechnum aggregatum.

Blechnum aggregatum (Col.) Tindale, n. comb.

Basionym: *Lomaria aggregata* Col. in *Trans. N.Z. Inst.*, 20: 223. 1888.

Synonym: *Blechnum lanceolatum* (R.Br.) Sturm, *Enum. Pl. Cr. Chil.*, 25. 1858, non *B. lanceolatum* Raddi, *Opusc. Sci. Bol.*, 3: 294. 1819.

Distribution: New Zealand and south-eastern Australia (New South Wales, Victoria and Tasmania).

Since *B. lanceolatum* (R.Br.) Sturm is a later homonym, a new combination is necessitated for this species. At the Kew Herbarium I have examined a possible isotype of *Lomaria aggregata* Col. labelled "communicated by Colenso, May 1890", without any specific locality. It resembles young plants of the species formerly known as *B. lanceolatum* and collected in eastern Australia. The type of *L. aggregata* was collected near Danneverke, County of Waipawa, New Zealand, by W. Colenso in 1887, whereas the type of *Stegania lanceolata* R.Br. was obtained by Brown in Van Diemen's Land (Tasmania).

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EXPLANATION OF PLATE VII.

Photograph of the type specimen of *Osmunda procera* Forst. f., "In Nova Zeelandia, leg. Forster", in the herbarium of the University of Göttingen, Germany.

Photo by courtesy of the Director, The Herbarium, University of Göttingen.